

**Request to Archive  
With The National Centers for Environmental Information  
For High-resolution Infrared Radiation Sounder (HIRS) Cloud Top Properties  
Provided by University of Wisconsin**

**2014-01-03**

This information will be used by NCEI to conduct an appraisal and make a decision on the request.

**1. Who is the primary point of contact for this request?**

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**2. Name the organization or group responsible for creating the dataset.**

UWI-MAD/SSEC/CIMSS > Cooperative Institute for Meteorological Satellite Studies, Space Science and Engineering Center, University of Wisconsin, Madison

**3. Provide an overview summarizing the scope of data you want to archive. Describe the outputs, data variables, including their measurement resolution and coverage.**

For 2000 to 2009 from 60N to 60S non-polar global HIRS cloud top pressure (CP) and effective cloud amount (CAE) (i.e., cloud amount multiplied by cloud emittance) are determined using radiances measured in spectral bands located within the broad 15  $\mu\text{m}$  CO<sub>2</sub> absorption region. The following cloud properties are processed daily and given as monthly statistics: cloud amount (CA), which denotes the cloud amount associated with all clouds, high cloud amount (CAH) denoted by clouds with CP < 440 hPa, mid-level cloud amount (CAM) denoted by clouds with CP 440 hPa < CP < 680 hPa, and low-level cloud amount (CAL) denoted by clouds with CP > 680 hPa. Cloud amount (CA) and all other variables are computed over each 0.5 degree grid cell per day and then averaged over the month.

**4. What is the time period covered by the dataset? (YYYY-MM-DD, YYYY-MM or YYYY)**

From 2000-01-01 to 2009-12-31

**5. Edition or version number(s) of the dataset:**

v1

**6. Describe the level to which the data are processed. For example, are these unprocessed raw observations, derived parameters, quality controlled or inter-calibrated data, etc.?**

The raw HIRS Level 1B files are obtained from NOAA's Comprehensive Large Array-data Stewardship System in NetCDF-4 format. The algorithm uses HIRS recalibrated radiances that are consistent throughout the HIRS time series for channels 4-7.

For each HIRS instantaneous field of view (IFOV) the presence/absence of clouds is determined by the Advanced Very High Resolution Radiometer (AVHRR) Pathfinder Atmospheres - Extended (PATMOS-x) cloud mask taking advantage of its higher spatial resolution of 1.14 km.

HIRS cloud top pressure and effective cloud amount (i.e., cloud fraction multiplied by cloud emittance) are then

determined using cloudy radiances measured in spectral bands located within the broad 15  $\mu\text{m}$  (666  $\text{cm}^{-1}$ )  $\text{CO}_2$  absorption region and compared with collocated cloud free radiances inferred from calculations using the NCEP-NCAR Reanalysis. The most opaque spectral bands are used to estimate high cloud properties; less opaque spectral bands are used for lower clouds. If the clear-sky and cloudy radiances have differences within the instrument noise (which often occurs for clouds below 650 hPa), the cloud is assumed to be opaque and the infrared window (IRW) brightness temperature (BT) is compared to the NCAR/NCEP Reanalysis temperature profile.

For each HIRS sensor, daily and monthly statistics of HIRS cloud top pressure and effective cloud amount are produced as gridded files at 0.5 degree resolution using an equal angle projection for high, mid-level, and low-level cloud.

**7. Approximate date when the dataset was or will be released to the public:**

2014-01-31

**8. Who are the expected users of the archived data? How will the archived data be used?**

NCDC affiliates and GEWEX participants

**9. Has the dataset undergone user evaluation and/or an independent review process? Did NCEI participate in design reviews?**

No

**10. Describe the dataset's relationship to other archived datasets, such as earlier versions or related source data. If this is a new version, how does it improve upon the previous version(s)?**

NA

**11. List the input datasets and ancillary information used to produce the data.**

In addition to the recalibrated HIRS radiances, data sources include the AVHRR PATMOS-x cloud mask, NCEP Reanalysis data, and modeled data from PFAAST.

**12. List web pages and other links that provide information on the data.**

Planck function coefficients provide with CATBD. Operational satellites for any given day designated by NOAA.

**13. List the kinds of documents, metadata and code that are available for archiving. For example, data format specifications, user guides, algorithm documentation, metadata compliant with a standard such as ISO 19115, source code, platform/instrument metadata, data/process flow diagrams, etc.**

1. CATBD-CTP

**14. Indicate the data file format(s).**

1. netCDF-4

**15. Are the data files compressed?**

No

**16. Provide details on how the files are named and how they are organized (e.g., file\_name\_pattern\_YYYYMM.tar in monthly aggregations).**

daily mean output files will have names like: HIRS\_METOPA\_dailymean\_cldprd\_D09001\_v5.0.nc

monthly mean output files will have names like: HIRS\_METOPA\_200901\_monthly\_cloud\_stats\_v5.0.nc

**17. Explain how to access sample data files and/or a file listing for previewing. If it is not available now, when will it be available?**

**18. What is the total data volume to be submitted?**

**Historic Data: all historic data or data submitted as a completed collection.**

Total Data Volume: 220GB

Number of Data Files: 240

**Continuous Data: data volume rate for a continuous data production.**

Total Data Volume Rate: 60MB per Day

Data File Frequency: 30 per Month

Data Production Start: 2000-01-01

**19. Are later updates, revisions or replacement files anticipated? If so, explain the conditions for submitting these additional data to the archive.**

use of CRTM instead of PFAAST

use of 0.5 degree resolution CFSR instead of 2.5 degree NCEP Reanalysis

**20. Describe the server that will connect to the ingest server at NCEI for submitting the data.**

Physical Location: Madison, Wisconsin (TBD).

System Name: Trends

System Owner: SSEC

Additional Information:

**21. What are the possible methods for submitting the data to NCEI? Select all that apply.**

1. FTP PULL

**22. Identify how you would like NCEI to distribute the data. Web access support depends on the resources available for the dataset.**

1. Unknown

**23. Will there be any distribution, usage, or other restrictions that apply to the data in the archive?**

No known constraints apply to the data.

**24. Discuss the rationale for archiving the dataset and the anticipated benefits. Mention any risks associated with not archiving the dataset at NCEI.**

HIRS provides the only 30 plus year record of IR measurements sensitive to CO<sub>2</sub>, H<sub>2</sub>O, and O<sub>3</sub>; these processed for cloud and moisture observation trends constitute a unique record that subsequent investigators will study with new insights.

**25. Are the data archived at another facility or are there plans to do so? Please explain.**

No

**26. Is there an existing agreement or requirement driving this request to archive? Have you already contacted someone at NCEI?**

No

**27. Do you have a data management plan for your data?**

No

**28. Have funds been allocated to archive the data at NCEI?**

No

**29. Identify the affiliated research project, its sponsor, and any project/grant ID as applicable.**

N/A

**30. Is there a desired deadline for NCEI to archive and provide access to the data?**

Archive by: 2014-03-03

Accessible by:

**31. Add any other pertinent information for this request.**

None